

FY07-LXI (61)-153

“Phase III – Mercury Control Technologies for Utilities Burning Lignite Coal: Full-Scale Evaluation of Long-Term Balance-of-Plant Effects Resulting from Activated Carbon Injection”

Contractor: EERC

Principal Investigator: John Pavlish

PARTICIPANTS

<u>Sponsor</u>	<u>Cost Share</u>
U.S. DOE	\$ 270,703
SaskPower	\$ 4,429,297
NDIC	<u>\$ 300,000</u>
Total Cost	\$ 5,000,000

Project Schedule – 13 Months	Project Deliverables
Contract Date – 6/19/07	Status Reports:
Start Date – 3/1/07	9/30/07 (✓); 12/31/07 (✓)
Completion Date – 3/31/08	Final Report: 4/30/08 (–)
Extended To – 3/31/09	3/31/09 ()

OBJECTIVE / STATEMENT OF WORK:

EERC proposes to conduct a yearlong, full-scale test of activated carbon injection upstream of an electrostatic precipitator at SaskPower Poplar River Unit 2 to determine long-term effectiveness for mercury removal and to further evaluate balance of plant impacts.

STATUS

Though September 30, 2007. Under the baseline testing, results showed very similar mercury values to those obtained under Phase II, indicating consistent plant operations. Documentation of the status of system components was made to ensure that a baseline was established for the condition of unit components like ESP plates, ductwork, etc. Parametric testing was initiated in June and July to evaluate injection at one of two locations: either the air heater inlet or the ESP inlet. There were some mechanical problems with the blowers and gaskets causing leakage of activated carbon and plugged hoses leading to project delays.

October 1 – December 31, 2007. Issues with activated carbon (AC) transport were again experienced, resulting in plugged hoses and lances. Long-term testing will be at the air heater inlet instead of at the ESP inlet. There were problems with the continuous mercury monitors (CMM); however, it was determined that the long-term test could be started without the availability of CMM data. The test was initiated on December 4, 2007. On December 18, problems occurred with the injection skid. These issues will be resolved before restarting of the long-term testing.

January 1 – March 31, 2008. Long-term test resumed January 10. In March, flue gas samples using the Ontario Hydro method were collected along with coal and ash samples. Efforts to determine the ESP collection efficiencies were initiated. Because of equipment problems, a request to extend the project contract through March 31, 2009 was approved by the NDIC.

April 1 – June 30, 2008. The ACI skid showed problems with the level sensor that provides feedback concerning the level of the AC in the hopper. There are some warranty issues that need to be worked through in order to modify the process. Comparison of the unit from May to November 2007 has shown no corrosion or erosion in the ESP or AH.

July 1 – September 30, 2008. The mercury capture rate from the AH inlet and ESP outlet is approximately 65%, which is consistent with the results that were obtained during parametric testing earlier in the project and is an encouraging indication that despite several problems with the skid, it appears that mercury removal is still fairly consistent. During this quarter, several signs of part failure and wear have been noted as a result of continuous injection of AC, requiring maintenance and replacement of several components.